

TITLE

PROCESS FOR THE PREPARATION OF 1,1,1,3,3,3-  
HEXAFLUOROPROPANE AND AT LEAST ONE OF 1,1,1,2,3,3-  
HEXAFLUOROPROPANE AND 1,1,1,2,3,3,3-HEPTAFLUOROPROPANE

5 ABSTRACT OF THE DISCLOSURE

A process is disclosed for the manufacture of 1,1,1,3,3,3-  
hexafluoropropane (HFC-236fa) and at least one 1,1,1,2,3,3-  
hexafluoropropane (HFC-236ea) and 1,1,1,2,3,3,3-heptafluoropropane  
(HFC-227ea). The process involves (a) reacting HF, Cl<sub>2</sub>, and at least one  
10 halopropene of the formula CX<sub>3</sub>CCl=CX<sub>2</sub> (where each X is independently  
F or Cl) to produce a product including both CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub> and  
CF<sub>3</sub>CCIFCCIF<sub>2</sub>; (b) reacting CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CCIFCCIF<sub>2</sub> produced in  
(a) with hydrogen to produce a product comprising CF<sub>3</sub>CH<sub>2</sub>CF<sub>3</sub> and at  
least one compound selected from the group consisting of CHF<sub>2</sub>CHF<sub>2</sub>CF<sub>3</sub>,  
15 and CF<sub>3</sub>CHF<sub>2</sub>CF<sub>3</sub>; and (c) recovering from the product produced in (b),  
CF<sub>3</sub>CH<sub>2</sub>CF<sub>3</sub> and at least one compound selected from the group  
consisting of CHF<sub>2</sub>CHF<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CHF<sub>2</sub>CF<sub>3</sub>. In (a), the CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub>  
and CF<sub>3</sub>CCIFCCIF<sub>2</sub> are produced in the presence of a chlorofluorination  
catalyst including a ZnCr<sub>2</sub>O<sub>4</sub>/crystalline α-chromium oxide composition, a  
20 ZnCr<sub>2</sub>O<sub>4</sub>/crystalline α-chromium oxide composition which has been  
treated with a fluorinating agent, a zinc halide/α-chromium oxide  
composition and/or a zinc halide/α-chromium oxide composition which has  
been treated with a fluorinating agent.

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DEH/dmm